



Influence of Facilitating and Hindering Variables of Academic Engagement in Spanish Secondary Students

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Academic Engagement (AE) can explain part of the success of current educational programmes. This observational and prospective study aims to identify the facilitating and hindering psychosocial variables involved in AE. We included achievement goals and academic motivation as facilitating academic variables and perceived stress and social problems as hindering variables. The sample included 603 students who were consecutively recruited in ESO and Baccalaureate in schools in Barcelona. The inclusion criteria for the participants were as follows: to be enrolled in a year from 1st year of ESO to 2nd year of Baccalaureate; to have access to the average mark of the previous year and to complete the questionnaires in full. The following were administered: Utrecht Work Engagement Scale-Student version, Achievement Goal Questionnaire-Revised, Academic Motivation Scale, Perceived Stress Scale and Youth Self Report / 11-18. Linear regression analysis shows that the variables involved in the development and maintenance of AE were intrinsic motivation, mastery approach and extrinsic motivation whereas lack of motivation, perceived stress and social issues were hindering variables ($R^2 = 0.634$; $F = 98.793$; $p = 0.000$). In conclusion, all these variables should be taken into account because they can contribute to academic engagement in students.

Keywords: academic engagement, achievement motivation, perceived stress, psychopathology, motivation

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INTRODUCTION

Finding out which factors either facilitate or hinder engagement is crucial if we are to promote our students' academic success (Martínez et al., 2016; Uludag, 2016). Engagement is a motivational factor that includes effort (high degree of effort shown in taking on tasks), dedication (enthusiasm and setting goals for work) and absorption (a feeling that time passes quickly and conformity with the task at hand) (Martin et al. 2021; Finn & Zimmer, 2012; Carmona et al., 2019; Thomas & Allen, 2021; Oporto et al., 2019). According to Salanova et al. (2012) the facilitators and hinderers of engagement, these have a direct influence on student performance and an indirect effect on their level of commitment.

Academic motivation and achievement goals have classically been included as facilitators of engagement (Amrollahi, 2021). There are three types of academic motivation in relation to students' basic needs: intrinsic motivation, extrinsic motivation and amotivation (Deci & Ryan, 2016; Núñez et al., 2015; Skinner et al., 2014). Intrinsic motivation can be seen in those students who perform a task moved by factors within themselves, without external pressure, because they have given meaning to the activity, carrying out autonomous actions aimed at academic success. According to Deci & Ryan (2016) intrinsic motivation is born from a need for competence and self-determination that drives individuals to gain knowledge, achievement and stimulate experiences. It implies that learning happens while experiencing pleasure or while trying to learn something new (Núñez et al., 2015). Extrinsic motivation implies taking on a task to achieve a reward (Vallerand et al., 2019). Amotivation represents a lack of motivation, since the person perceives a lack of control and a disconnect between their behaviour and its consequences (Vallerand et al., 2019; Deci & Ryan, 2016). Therefore, if, according to the literature reviewed, motivation and engagement are related, it seems that those students who are motivated more intrinsically are those who will achieve higher levels of academic engagement (Deci & Ryan, 2016; An, 2015; Christenson et al., 2012). Also, academic motivation of students can be observed through the desire, for example, to be actively involved in lectures and it can be measured using operational scales and observational rubrics, determination to overcome difficulties as well as the desire to recover and try again when they experience a failure (Hidajat et al., 2020).

Achievement motivation is the competency-based objective used to guide behaviour (Elliot & Dweck, 2013). To date, few studies have addressed the relationship between achievement motivation and academic engagement. González-Valenzuela & Martín-Ruiz (2016) showed that the motivation for academic achievement is related to academic performance (Valadez-Sierra et al., 2016). A recent meta-analysis that reviewed 189 studies on the link between the affective relationship of students and teachers and engagement and academic achievement concluded that there is indeed a relationship between the two (Roorda et al., 2011; Roorda et al., 2017). Related to this, it is important that teachers be familiar with, for example, different teaching styles, apply good transmission of knowledge and be nurturing to increase students' engagement (Khun-Inkeeree et al., 2021).

Perceived stress and social problems in students are barriers to engagement (Grant et al., 2011). Perceived stress may be due to interactions with peers and teachers, the demands of academic work and school rules, as well as the connection between leisure spaces and schoolwork. In this sense, there is no scientific evidence associating perceived stress and academic engagement, nor was there any evidence of the influence of other events such as divorce, loss of employment or the death of a family member (Herbers et al., 2013). Similarly, it appears that stressful experiences in early adolescence are associated with low academic engagement and prosocial values, as well as symptoms of depression (Tolan et al., 2013; Wang & Peck, 2013). Wang & Fredricks (2014) noted a relationship between school children with lower rates of behavioural and emotional engagement in school and delinquent behaviour and substance abuse. The relationships between engagement and violent behaviour were two-way, while low behavioural and emotional engagement and the presence of more problematic behaviour were shown to be predictors of early school leaving. The relationship between socio-emotional functioning, substance abuse and engagement has also been described in the literature (Wigfield et al., 2015). In contrast, it appears that students with a high sense of social connection show better results in terms of achievement, engagement and positive attitudes (Pianta et al., 2012; Stroet et al., 2013; King, 2015; Wentzel & Muenks, 2016).

To date, few studies have addressed the issue in the Spanish secondary and baccalaureate population, and some of the results are not consistent in this way; further research is needed to clarify this issue. This study aims to evaluate the ability of certain variables to explain engagement, both facilitating (school motivation and achievement goals) and hindering (perceived stress and social problems). It uses a sample of Spanish teenagers studying in ESO (Compulsory Secondary Education) and Baccalaureate.

METHOD

Sample

The design of this prospective study was cross-sectional and observational with a non-randomly selected sample that included 603 students from 1st year to 4th year of ESO and Baccalaureate from 4 state schools providing compulsory secondary education in Barcelona. The total sample was obtained after applying the following inclusion criteria: to be enrolled in a year from 1st year of ESO to 2nd year of Baccalaureate; to have access to the average mark of the previous year and to complete the questionnaires in full. The exclusion criteria were the following: having some kind of disability that makes it difficult to read and understand the questions, being under 12 years of age and reporting fatigue or a physical condition that makes it difficult to complete the protocol. This study has been approved by the ethics committees of Abat Oliba CEU University in Barcelona and was conducted in accordance with the ethical standards of the Declaration of Helsinki.

Instruments

Socio-demographic questionnaire. It included sociodemographic data on the adolescent (age, gender, current academic year and, in the case of Baccalaureate students, the chosen specialty was indicated, as well as whether or not they had repeated a year and, if they had, what year) and the family (level of schooling and occupation of the parents). With the variables of schooling level and occupation of the parents, the family socioeconomic level index was calculated following the Hollingshead indications (Hollingshead, 2011). The parents' level of education was divided into 7 categories, from no primary schooling to completed degree studies. Occupation was divided into 8 categories from unemployed to director and/or manager of a large company. The Socioeconomic Level ranges from 8 to 66 points and provides five indicators: low, medium-low, medium, medium-high and high.

Utrecht Work Engagement Scale-Student version (UWES-S-9; Schaufeli et al., 2002; Serrano et al., 2019): this is a Likert-type questionnaire comprising 9 items (0 = never; 3 = regularly; 6 = always) in which three factors are measured: effort, dedication and absorption. These three factors provide an overall engagement score. The full Spanish version of the scale was used. The validity, following Cronbach's alpha, is 0.89 to 0.97 (Schaufeli & Bakker, 2004; Serrano et al., 2019)

Achievement Goal Questionnaire-Revised (AGQ-R; Elliot & Murayama, 2008; Strunk, 2014): Likert-type questionnaire comprising 12 items with 4 subscales, so all items are classified in a range from 1 to 7, where 7 indicates "always". These subscales are: mastery-approach goals (ex. "My aim is to completely master the material presented in class"), mastery-avoidance goals (ex. "My aim is to avoid learning less than I possibly could in this course"), performance-approach goals (ex. "I am striving to do well compared to other students in this course"), and performance-avoidance goals (ex. "My goal is to avoid performing poorly compared to others in class"). The full Spanish version of the scale was used (Sánchez-Rosas, 2015). The validity, following Cronbach's alpha, is, respectively, 0.84 in mastery-approach, 0.88 in performance-approach, 0.92 in mastery-avoidance, 0.94 in performance-avoidance (Sánchez-Rosas, 2015).

Academic Motivation Scale (MAT; Núñez et al., 2005; 2010): this is a Likert-type questionnaire comprising 28 items, all with a score range of 1 to 7, where 7 indicates "always". It measures three factors: Intrinsic Motivation (IM) (ex. "Because I feel pleasure and satisfaction when I learn new things"), Extrinsic Motivation (EM) (ex. "Because it will help me make a better decision regarding my career guidance") and Amotivation (AM) (ex. "I honestly don't know, I think I'm wasting my time in high school"). The full Spanish version of the scale was used. The validity, according to Cronbach's alpha, is 0.76 and 0.84.

Perceived Stress Scale (PSS-10; Remor, 2006; Serrano & Andreu, 2016): Likert-type questionnaire comprising 10 items (between 1 and 4 and where 4 indicates "yes, true" to one of the factors measured: level of perceived stress in the last month and degree to

which life situations are described as stressful (ex. “In the past month, how often have you been affected by something that happened unexpectedly?”). The full Spanish version of the scale was used. The validity in the Spanish version following Cronbach’s alpha was 0.87 (Remor, 2006).

Youth Self Report/11-18 (T-YSR; Achenbach & Rescorla, 2000; Barcelata-Eguiarte & Márquez-Caraveo, 2019): Likert type questionnaire comprising 40 items scored from 0 to 2, where 2 indicates “yes, frequently”. It consists of 4 subscales that analyse behavioural and emotional problems: anxiety/depression (ex. “I feel very lonely”), social problems (ex. “I disobey my parents”), attention problems (ex. “I can’t focus or pay attention for long”) and aggressive behaviour (ex. “I argue a lot”). 40 of the 103 items in the second part of the Spanish version of the questionnaire were used. Cronbach’s alpha in a Spanish sample (Abad et al., 2000) was: 0.83 for depression/anxiety in boys and 0.82 in girls; 0.59 for aggressive behaviour in boys and 0.62 in girls; 0.59 for inattention in boys and 0.74 in girls, and 0.64 for social problems in boys and 0.70 in girls.

Process

School principals requested informed consent from participants’ parents and were informed of the objectives of the study, as well as any concerns. Data collection was done through questionnaires carried out in classrooms. Students were told that the survey was voluntary, that they could withdraw at any time and that their responses were anonymous. A researcher and a teacher remained in the room during the administration of the questionnaires. The average time required to complete the questionnaire was approximately 20 minutes and it was conducted within regular school hours.

To analyse the relationship between academic engagement and the variables that facilitate and hinder it, Pearson’s correlation was used for both the global sample and the analyses separated by gender. In addition, linear regression models were used to assess the specific contribution of academic engagement and its psychosocial variables. A value of $p < 0.05$ was considered statistically significant for all analyses. The statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS) 23.0 for Windows (SPSS Inc., Chicago, Illinois, USA).

The sample included 603 students from the 1st year to the 4th year of ESO and Baccalaureate, 55.9% ($n=337$) boys and 44.1% ($n=266$) girls, with an average (M) age of: 15.2 years; standard deviation (SD): 1.6; range 12-19 years old. The average family socioeconomic level of the participants was 43.1 (SD=11; range from 13 to 66) which indicates that the students come from a medium-high family socioeconomic level. The demographic and socio-economic data of the participants are summarised in Table 1.

Table 1
Demographic and socio-economic data of the sample (n=603)

Variable	n	%
Gender		
Male	337	55.9
Female	266	44.1
Age in years (M; SD) ^a	15.2 (1.6)	
Socioeconomic Level of Family ^b	43.1 (11)	
School year		
ESO 1	74	12.3
ESO 2	70	11.6
ESO 3	63	10.4
ESO 4	167	27.7
Baccalaureate 1	145	24
Baccalaureate 2	84	13.9

Note. M= Mean; SD= Standard deviation.

^a The age range is between 12 and 19 years.

^b Range of scores: 8-66.

FINDINGS

Descriptive Statistics

The descriptive statistics are shown in Table 2. No statistically significant differences were found between male and female students regarding the level of academic engagement ($t = -0.543$; $p = 0.587$).

Table 2
Descriptive statistics between study variables

	M(SD)
UWES-S-9. Utrecht Work Engagement Scale-Student version	3.5 (1.1)
Facilitating variables	
AGQ-R. Performance-Approach goal	3.7 (1.5)
AGQ-R. Mastery-Approach goal	5.1 (1.3)
AGQ-R. Performance-Avoidance goal	4.6 (1.3)
AGQ-R. Mastery-Avoidance goal	4.0 (1.5)
MAT. Intrinsic Motivation	4 (1.1)
MAT. Extrinsic motivation	4.9 (1.1)
MAT. Amotivation	1.8 (1)
Hindering Variables	
PSS-10. Perceived stress	18.5 (6.4)
T-YSR Depression/anxiety	9.1 (5.9)
T-YSR Inattention	7.2 (3.3)
T-YSR Aggressive behaviour	3.0 (2.3)
T-YSR Social problems	10.4 (5.8)

Note. M= Mean; SD= Standard Deviation; UWES-S-9= Utrecht Work Engagement Scale-Student version; AGQ-R= Achievement Goal Questionnaire-Revised; MAT= Academic Motivation Scale; PSS: Perceived Stress Scale; T-YSR: Youth Self Report/11-18. * $p < 0.05$

Multiple Analyses

We sought to assess the potential of the variables taken into consideration to predict academic engagement using linear regression analysis. To achieve this objective, a linear stepwise regression was carried out, including those predictor variables with which academic engagement showed statistically significant correlations in the previous correlation analysis. Linear regression analysis shows that the variables involved in the development and maintenance of AE were intrinsic motivation, mastery approach and extrinsic motivation whereas lack of motivation, perceived stress and social issues were hindering variables ($R^2 = 0.634$; $F = 98.793$; $p = 0.000$). See table 3.

Table 3
Results of the hierarchical regression between academic engagement and the rest of the variables of the study

Model	Non-standardised coefficients		Standardised coefficients		
	β	Typical error	β	t	Sig.
Model 1					
Constant	0.597	0.164		3.650	0.000
Intrinsic motivation	0.741	0.039	0.719	19.012	0.000
Model 2					
Constant	1.405	0.196		7.161	0.000
Intrinsic motivation	0.664	0.038	0.645	17.273	0.000
Amotivation	-0.283	0.043	-0.248	-6.649	0.000
Model 3					
Constant	0.843	0.218		3.858	0.000
Intrinsic motivation	0.555	0.043	0.539	13.002	0.000
Amotivation	-0.248	0.042	-0.218	-5.974	0.000
Mastery approach	0.182	0.035	0.213	5.145	0.000
Model 4					
Constant	1.236	0.233		5.306	0.000
Intrinsic motivation	0.557	0.042	0.541	13.370	0.000
Amotivation	-0.202	0.042	-0.177	-4.792	0.000
Mastery approach	0.181	0.034	0.212	5.253	0.000
Stress	-0.027	0.006	-0.146	-4.196	0.000
Model 5					
Constant	0.864	0.257		3.368	0.001
Intrinsic motivation	0.508	0.044	0.493	11.592	0.000
Amotivation	-0.192	0.042	-0.168	-4.608	0.000
Mastery approach	0.175	0.034	0.204	5.126	0.000
Stress	-0.027	0.006	-0.148	-4.316	0.000
Extrinsic motivation	0.118	0.036	0.121	3.248	0.001
Model 6					
Constant	1.337	0.337		3.970	0.000
Intrinsic motivation	0.502	0.044	0.488	11.510	0.000
Amotivation	-0.180	0.042	-0.158	-4.314	0.000
Mastery approach	0.165	.034	0.194	4.848	0.000
Stress	-0.022	0.007	-0.122	-3.363	0.001
Extrinsic motivation	0.139	0.037	0.143	3.726	0.000
Social problems	-0.009	0.004	-0.080	-2.152	0.032

DISCUSSION

In this study, we have analysed the presence of academic engagement in adolescents in ESO and Baccalaureate, as well as the relationship between this and other variables such as academic and achievement motivation, stress and social problems. Specifically, it has been observed that the variables of intrinsic and extrinsic motivation, lack of motivation, mastery approach, stress and social problems are related to academic engagement.

Students in our sample obtained a mean score of 3.5 [Standard Deviation, (SD) = 1.1, range 1 to 7] on the Academic Engagement Scale. This seems to indicate that the engagement reported by students, i.e. the degree of effort, enthusiasm and conformity with what they are doing, falls somewhere within the average range. Comparing these results with the study by Schaufeli & Bakker (2003) —the latter with a sample of 12,631 subjects [mean (M)= 4.1, SD= 1.1]. This degree of academic engagement is significantly higher than in the students we have sampled, however, it is noted that both scores fall within the mid-range of academic engagement. In addition, the subjects who participated in the above-mentioned study were all university students, a fact that may explain some of these differences in the outcome of our study, since it seems logical to assume academic engagement is a construct that generally tends to increase over the course of a student's academic life and, consequently, it is a dynamic and ongoing process (Hidajat et al., 2020)

As for academic engagement, men obtained an average score of 3.5 (SD= 1.1) and women 3.5 (SD= 1.1) and no significant differences were found based on gender ($t = -0.543$; $p = 0.587$). These data would be in line with a recent validation study of a scale of engagement in Spain that found no differences in academic engagement based on gender (García-Ros et al., 2016; Wang et al., 2011). There are other studies that detected differences in the level of engagement in academic performance among female primary school students (Yu, 2021), with a higher level of engagement in girls (Oga-Baldwin & Nakata, 2017), however, our sample is composed of secondary school and Baccalaureate students, a fact that distinguishes the samples of the two studies.

In this same line, other authors have indicated that academic engagement, regardless of type, appears to be higher in women compared to men (Ayub et al., 2017; Wang & Eccles, 2013). However, Barkatsas et al. (2009) indicated that emotional and behavioural engagement was more closely associated with greater success in mathematics in men than in women. In view of these inconclusive results, we believe that further research is needed to clarify which variables influence academic engagement and to what extent, and how this knowledge can be applied to increase student success in current academic programmes.

One of the main findings of this study was that academic engagement can be predicted to a greater extent by intrinsic motivation. In this sense our data seems to be in line with a relevant study other research such as that of Blumendfeld et al. (2006), where it is highlighted, that intrinsic motivation is a necessary condition for engagement since it allows learning to happen while experiencing pleasure or trying to learn something new

(Núñez et al., 2005). Behind intrinsic motivation, we can identify three other motivational variables that can predict engagement, which are amotivation, a mastery approach and extrinsic motivation. It should be noted that amotivation, understood as the lowest level of motivation, contributes negatively to predicting engagement, that is, as students perceive a greater lack of control in the relationship between their behaviour and their consequences, engagement falls (Núñez et al., 2005). The predictive model also indicates that a certain level of extrinsic motivation (with $\beta = 0.143$) is necessary to be able to predict academic engagement, something that coincides with previous research carried out by Vallerand et al. (2019). All these data would be in accordance with the recent study of Hidajat et al. (2020), which indicates that students' academic motivation was a dynamic and ongoing process, which was affected by intrinsic (from amotivation to intrinsic motivation) and extrinsic factors such as social support, goal orientation, achievement anxiety, and self-efficacy.

Finally, our predictive model confirms that students who set goals that imply a high need for achievement, intrinsic motivation or high level of interest in the task and who focus on achieving competencies at a personal level are the most engaged with their studies. This is in line with what has already been mentioned, in the sense that a preference for mastery-approach goals is linked to focussing on success as the core of the activity, promoting hope and positive emotions as the drive behind the activity (Elliot & McGregor, 2001; Méndez-Giménez et al., 2016; Datu et al., 2021).

In this predictive model, obstacles to academic engagement include stress and social problems in the global sample. Thus, if students perceive as stressful events in the school dynamic, such as interactions with peers and teachers, the demands of academic work and school rules, exams and compulsory work, along with concerns about their academic future, their level of engagement will fall, in line with work by Grant et al. (2011), Moses & Villodas, 2017; Moksnes et al. (2014), Fiorilli et al., 2017 & Garcia-Ros et al. (2016). As for social problems, the predictive model suggests that if students perceive their relationships with peers as negative, this affects their level of academic engagement. In this regard, in line with the above, we can predict that if students do not perceive support from their teachers, parents and peers (thus indicating social problems) their level of engagement will decrease, as seen in Estell & Perdue (2013) and Rowe et al. (2016). Specifically, the level of engagement of students taken as a whole increases when faced with a task or challenge presented as a means of obtaining knowledge, surpassing themselves and perceiving it as a stimulating experience (intrinsic motivation).

CONCLUSIONS

In summary, as we have seen, the level of engagement of students seems to increase if they first seek to adequately solve a task in order to demonstrate to themselves that they can do it, and thereby surpass themselves, setting aside comparisons with their peers (mastery approach). Furthermore, engagement increases, though to a lesser extent, if, when facing a school challenge, students are motivated not only to achieve an end, but

to obtain a reward (achievement approach). Our research allows us to provide some pedagogical guidelines aimed at increasing the level of engagement of students or to be included in the training of teachers. Finally, the detection of social problems typical of the affective and social world of adolescents, and subsequent interventions to manage them, is another key area in increasing levels of academic engagement. In this regard, we should take into account academic resilience (Martin et al., 2013; Nicoll, 2014) and its measurement (Ramdani et al., 2020) for detection and intervention by teachers, family, peers and the school's counselling team, as it may be relevant in addressing the academic engagement in these students (Barkley & Major, 2020).

This study, though based on a large and homogeneous sample, presents some limitations that should be considered if findings are to be generalised. In this regard, a potential line of research for the future could be to explore whether there are differences in terms of gender and age in academic engagement and the other variables explored, as well as to include different types of schools (public and private) located in different areas of Barcelona. Future research could also expand on the data collected regarding academic engagement by using assessment strategies and instruments that further deepen the three components of academic engagement: absorption, effort and dedication, specifically in secondary and Baccalaureate students. Similarly, it could include other variables that have not been considered in this study, such as personality, cognitive performance or other social variables, which would provide a much richer picture of their relationship with engagement. The recognition that we are dealing with a population in a particular stage of development and maturation has led to differences with other studies. A longitudinal study could clarify whether indeed many of the variables studied were subject to processes of gradual change over time, observing the behaviour of these differences across various years, particularly with regard to academic engagement.

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